

Relationship Between Nurses Qualifications and Their Skills in Early Detection of High Blood Pressure in Primary Health Care Centres in Delta State, Nigeria

M.I. Ofili

Department of Nursing Science, Delta State University, Abraka

Abstract: This study is aimed at assessing nurses' skills in screening and early detection of high blood pressure with a view to determining its relationship to their qualifications in primary health care centres in Delta State. Nurses are often engaged in the prevention of chronic diseases like hypertension in primary health care settings. However, information about their skills in screening and early detection of high blood pressure in South-South Nigeria are scarce. Therefore this research attempts to assess nurses' skills and procedures of measuring and detecting the early stage of hypertension. The observed skills were compared with their professional qualifications. An observational checklist was used to assess their skills in blood pressure measurement, history taking, physical examination and investigation as recommended by the Nurses Hypertension Association (NHA). Blood pressure was measured using a mercury sphygmomanometer by eighty-five participating nurses chosen from the twenty-nine randomly selected primary health care centres from the twenty-five local government areas in Delta State. The results show that 77% of the nurses were found to be good in blood pressure measurement and 67% were good in investigation. Fifty-three percent (53%) were found to be good in history taking and 63% in physical examination. Furthermore, results showed that skills in blood pressure assessment were dependent on professional qualifications. Overall, most of the nurses had no training in the management of hypertension and did not make use of the NHA guidelines. These indicate the need for facilities to organize training courses on hypertension management for nurses. It would also be beneficial to include new trends in nursing education. The NHA guidelines would need to be introduced to students while in school.

Keywords: Blood pressure, hypertension, nurses, patients, qualification, skills

INTRODUCTION

Nurses often take primary care responsibility for screening and follow up care of clients with chronic diseases in primary health care settings. One group of such clients are those with high blood pressure. Hypertension is well suited to management by multidisciplinary team. According to Bengsten and Drevenhom (2003), nurses can effectively lead hypertension clinics provided they have the necessary knowledge and skills. It is expected that individual nurses will perform only those aspects of hypertension management for which they have adequate experience and have received appropriate education, but will seek appropriate consultation in instances where the client's care needs surpass their ability to act independently.

Nurses working caring for hypertensive adults must have the appropriate knowledge and skills acquired through basic nursing education curriculum, ongoing professional development opportunities, and orientation to new work places. Knowledge and skills should include at minimum: pathophysiology of hypertension, maximizing opportunities for detection, facilitating diagnosis, assessing and monitoring clients with

hypertension, providing appropriate client/family education, supporting lifestyle changes, promoting the empowerment of the individual and documentation, and communication with the client and other members of the health care team. Nurse-led management of people with high blood pressure has led to improvements due to strict adherence to protocols, agreed target blood pressure, improved prescribing and compliance, and regular follow-up (Oakeshott *et al.*, 2003). Evidence suggesting potential benefits came from trials of nurse-led management for smoking, non-primary care-based hypertension management and cholesterol lowering (Oakeshott *et al.*, 2003) which all showed significant improvement mainly due to rigorous application of national guidelines and increased or more appropriate use of medication.

Nurses take every appropriate opportunity to assess the blood pressure of adults in order to facilitate early detection of hypertension. They utilize correct technique, appropriate cuff size and properly maintained/calibrated equipment when assessing client's blood pressure and are knowledgeable regarding the process involved in the diagnosis of hypertension. They also educate clients about self/home blood pressure monitoring techniques, appropriate equipment to assist in potential diagnosis and

the monitoring of hypertension, their target blood pressure and the importance of achieving and maintaining this target. The taking and recording of a blood pressure reading has no meaning unless the implication of the reading for the particular patient is noted and acted upon as needed. Hypertension care therefore, should be developed with nurses' holistic and psychosocial approach and skills taken into account.

This study is aimed at assessing nurses' skills in screening and early detection of high blood pressure with a view to determining its relationship to their qualifications in primary health care centres in Delta State.

METHODOLOGY

Location and population: Twenty-nine primary health care centres in twenty-five local government areas in the state were selected as the research settings between May-June, 2008. Delta State is one of the 6 states in the South-South region of Nigeria. These primary health care centres, service the health care needs at community levels and are under the management of the local government. The health care facilities serve as primary sources of care to members of the community and as the origin of referral to secondary and tertiary health institutions tertiary

health institutions for further care. They also serve as clinical sites for training student nurses and midwives, and medical students in the state.

Selection of study site and respondents: Delta State has about 290 primary health care centres (245 functional) with about 500 nurses working at the primary level (primary health care centres, comprehensive health centres, health clinics and health posts) within the twenty-five LGAs in the state. Ten percent (29) of the primary health care centers, one each from the 25 LGAs and four others were randomly selected for the study. From each primary health care centre, all available registered staff nurses were recruited (a sample size of 85 nurses) to be the sources of quantitative data.

Statistics: The mean score for observed skills and their professional qualifications were determined using F distribution.

RESULTS

From a total number of 290 primary health care centres in Delta state, 29 institutions constituting 10% of the population and all nurses in these institutions constituted the sample units for the study. The distribution

Table 1: Distribution of nurses in the selected 29 primary health care centres in Delta State, Nigeria

PHC centres	Nurses	Professional qualification			
	Frequency n = 85 (%)	RN n = (%)	RM n = (%)	RN, RM n = (%)	RN, RM, B.Sc/ B.N.Sc n = (%)
Isseluku	2 (2.4)			2 (2.4)	
Onichaugbo	3 (3.5)			3 (3.5)	
Issleazagba	1 (1.2)			1 (1.2)	
Ubulunor	7 (8.2)			7 (8.2)	
Ubulukwu	2 (2.4)			2 (2.4)	
Ubuluokiti	2 (2.4)			2 (2.4)	
Oria-abraka	1 (1.2)			1 (1.2)	
Abraka	3 (3.5)	1 (1.2)		2 (2.4)	
Igu-eku	2 (2.4)			1 (1.2)	1 (1.2)
Orono	1 (1.2)			1 (1.2)	
Oghara	3 (3.5)			3 (3.5)	
Umunede	4 (4.7)			4 (4.7)	
Boji-boji owa	3 (3.5)			3 (3.5)	
Agbor obi	5 (5.9)			5 (5.9)	1 (1.2)
Abavo	3 (3.5)			3 (3.5)	
Oleh	1 (1.2)			1 (1.2)	
Kwale	6 (7.1)			6 (7.1)	2 (2.4)
Orerokpe	3 (3.5)			3 (3.5)	
Akwukwuigbo	4 (4.7)			4 (4.7)	1 (1.2)
Illah	3 (3.5)			3 (3.5)	
Achalaigbuzo	4 (4.7)			4 (4.7)	
Okpanam	4 (4.7)			4 (4.7)	
Ughelli	2 (2.4)	1 (1.2)		1 (1.2)	
Obiaruku	2 (2.4)			2 (2.4)	
Umutu	1 (1.2)			1 (1.2)	
Warri	4 (4.7)			4 (4.7)	
Effurun	3 (3.5)			3 (3.5)	
Afiesere	2 (2.4)			2 (2.4)	
Ozoro	4 (4.7)			4 (4.7)	

PHC: Primary Health Care; RN: Registered Nurse; RM: Registered Midwife; B.Sc: Bachelor of Science; B.N.Sc: Bachelor of Nursing Science

Table 2: Distribution of respondents by the demographic characteristics

	Frequency n = 85 (%)
Age	
20-30	2(2.4)
31-40	26(30.6)
41-50	38(44.7)
51-60	19(22.4)
Marital status	
Single	3(3.5)
Married	82(96.5)
Gender	
Male	2(2.4)
Female	83(97.6)
Ethnicity	
Igbo	41(48.2)
Yoruba	1(1.2)
Hausa	2(2.4)
Urhobo	15(17.6)
Itsekiri	3(3.5)
Isoko	4(4.7)
Kwale	6(7.1)
Ika	13(15.3)
Religion	
Christianity	85(100.0)
Highest educational level	
Basic nursing education	77(90.6)
B.N.Sc/B.Sc	5(5.9)
Master degree	2(2.4)
Postgraduate diploma	1(1.2)
Specialized training	
Basic training in nursing	37(43.5)
PHN	18(21.2)
Family planning provider	2(2.4)
CHO	5(5.9)
PHN/CHO	19(22.4)
LSS	4(4.7)
Length of service (years)	
1-5	3(3.5)
6-10	13(15.3)
11-15	12(14.1)
16-20	12(14.1)
21-25	23(27.1)
26-30	16(18.8)
31-35	6(7.1)

B.N.Sc: Bachelor of Nursing Science; B.Sc: Bachelor of Science; PHN: Public Health Nurse; CHO: Community Health Officer; LSS: Life Saving Skill

of the nurses is as shown (Table 1). As depicted on the table, all the respondents were registered nurses. Table 2, presents a summary of the demographic features of the respondents in the study. The figures indicate that almost all the respondents were females (n = 83) with only 2 males. Over 40% of them were in the age group 41-50 years. About 90% of them were married and all were Christians. Majority (48%) were Igbos by ethnicity, while a few were Hausas (2%). About 6% (5) of the respondents had bachelor's degree and 2% had Master's Degree in Public Health (MPH). Out of the five respondents that had bachelor's degree, only one was in nursing.

According to the Nurses Hypertension Association (NHA, 2004), guideline, the diagnostic procedures essential for the management of hypertension include the accurate assessment of blood pressure, evaluation of

associated cardiovascular risk factors and diseases, history taking, routine investigation as well as execution of a detailed physical examination of patients. These NHA procedures were observed as respondents demonstrated them during the study, and the results are shown (Table 3). In explanation of procedure to the patients before blood pressure measurement, 40% explained the need/possibility of taking more than a reading while 10% explained that cuff will get tighter around the arms.

In activities under posture of patient and position of arm, all the nurses allowed patient sit with back supported and feet on the floor, placed cuff bladder 80% around arm with centre over brachial artery and placed cuff tubing pointing to shoulder, while about 13% allowed patient relax for at least 5 min before measuring blood pressure. All the nurses positioned the manometer properly before blood pressure measurement.

Inflation of cuff and reading of systolic and diastolic blood pressure was done correctly by 83% (25) of the respondents. History taking including identification of risk factors is another aspect of diagnostic procedure in hypertension management. To this end, the data reveal that 53% of the responding nurses took history of duration and previous levels of high blood pressure, while 17% took history of drugs used and symptoms suggestive of secondary causes of hypertension. About 10% took history of any other associated illness including heart failure and cerebrovascular diseases. The blood pressure measurement readings were rechecked by the investigator and about 77% respondents' blood pressure readings tallied with that of the investigator while 23% differed.

In conducting physical examination as a process in diagnosing hypertension, the findings show that all the nurses measured patient's height and body weight. About 20% determined Body Mass Index (BMI), while 13% examined the nervous system for evidence of hypertensive retinopathy. Results on routine investigations (Table 3) indicate that 67% conducted urine dipstick analysis for protein and glucose and about 50% conducted urine dipstick analysis for blood.

Statistical analysis shows that there was association between professional qualifications of the nurses and their skills in screening and early detection of high blood pressure.

DISCUSSION

It is apparent from the data that most nurses ignored some of the recommendations (NHA, 2004) made for accurate blood pressure measuring. However, it is not clear whether these are their everyday practices. All the nurses indicate that patients should be in a sitting position when their blood pressure is being measured. But it becomes questionable that only four nurses let patients rest for 5 min before measuring blood pressure and few measured both systolic and diastolic blood pressures

Table 3: Respondents' observed skills in blood pressure assessment

	Done n = (%)	Not done n = (%)
1. Preparation of the patient		
A. Explanation:		
i. Explains briefly the procedure to the patient.	4(13.3)	26(86.7)
ii. Explains that cuff will get tighter around the arms.	3(10.0)	27(90.0)
iii. Explains need for more than a reading.	12(40.0)	18(60.0)
B. Posture of patient and position of arm:		
i. Patient relax for at least 5 min before measuring BP.	4(13.3)	26(86.7)
ii. Let patient sit with back supported and feet on the floor.	30(100.0)	0(0.0)
iii. Measures BP in standing position for the elderly.	10(33.3)	20(66.7)
iv. Positions arm horizontally and supported with the ante cubital fossa at heart level.	25(83.3)	5(16.7)
v. Removes tight or restrictive clothing from the arm.	20(66.7)	10(33.3)
vi. Uses an appropriate BP cuff size for the patient.	15(50.0)	15(50.0)
vii. Uses a large bladder for fat arms.	10(33.3)	20(66.7)
viii. Places cuff bladder 80% around arm with centre over brachial artery.	30(100.0)	0(0.0)
ix. Places cuff with the tubing pointing to the shoulder.	30(100.0)	0(0.0)
x. Places lower edge of the bladder 2-3 cm above the point of maximal pulsation of the brachial artery.	20(66.7)	10(33.3)
C. Position of manometer:		
i. Positions manometer vertically.	30(100.0)	0(0.0)
ii. Positions manometer not more than 1 m from observer.	30(100.0)	0(0.0)
iii. Positions manometer at eye level of observer.	30(100.0)	0(0.0)
D. Inflation of the cuff and reading of systolic and diastolic blood pressure:		
i. Palpates the radial or brachial pulse of the subject.	10(33.3)	20(66.7)
ii. Rapidly inflates cuff to 30 mmHg above where the pulsation disappears.	25(83.3)	5(16.7)
iii. Places stethoscope over brachial artery with no pressure.	25(83.3)	5(16.7)
iv. Deflates cuff gradually at a rate of 2-3 mmHg per sec.	20(66.7)	10(33.3)
2. History taking		
a. Family history of hypertension and other diseases.	8(26.7)	22(73.3)
b. Duration and previous levels of high blood pressure.	16(53.3)	14(46.7)
c. History of drugs used.	5(16.7)	25(83.3)
d. Any other associated illness/disease	3(10.0)	27(90.0)
e. Secondary causes of hypertension.	5(16.7)	25(83.3)
f. Lifestyle factors	10(33.3)	20(66.7)
g. Personal, psychosocial and environmental factors	8(26.7)	22(73.3)
h. History of diabetes.	6(20.0)	24(80.0)
3. Physical examination		
a. Notes signs of an enlarged heart, oedema e.t.c.	10(33.3)	20(66.7)
b. Measures height.	30(100.0)	0(0.0)
c. Measures body weight.	30(100.0)	0(0.0)
d. Determines Body Mass Index (BMI).	6(20.0)	24(80.0)
e. Examines cardiovascular system for heart size	6(20.0)	24(80.0)
f. Examines the lungs for wheezes and crackles.	8(26.7)	22(73.3)
g. Examines the abdomen for bruits and other masses	19(63.3)	11(36.7)
h. Examines the optic fundi.	6(20.0)	24(80.0)
i. Examines nervous system for hypertensive retinopathy.	4(13.3)	26(86.7)
4. Investigation		
a. Performs urine dipstick analysis for protein.	20(66.7)	10(33.3)
b. Performs urine dipstick analysis for blood.	15(50.0)	15(50.0)
c. Performs urine dipstick analysis for glucose.	20(66.7)	10(33.3)

using appropriate cuff size. These may suggest that most nurses do not actually adhere to the recommendations. The blood pressure measurement readings were rechecked by the investigator and about 77% respondents' blood pressure readings tallied with that of the investigator, while 23% differed. The respondents' whose blood pressure readings differed were registered nurse/midwives with basic nursing education. Two of the respondents were public health nurse/and family planning provider. They were all in the age group 34-38 years. Training is needed and emphasis must be put to nurses on the accurate assessment of patients' blood pressure for proper management of this condition.

Sekokotla *et al.* (2003), reported that some nurses prefer patients' to sit when blood pressure is measured while some allow patients' to rest for 5 min before measuring blood pressure. Very few measured both systolic and diastolic blood pressures using appropriate cuff sizes as well as ensuring that the patient has not smoked, eaten or drank anything 30 min before blood pressure measurement.

Another aspect of treating new patients with hypertension is adequate history taking. According to the guideline, it includes evaluation of associated cardiovascular risk factors and diseases, which should ideally be assessed by doctors. Even though this is the

case, nurses indicate that they also conduct the evaluation themselves during history taking of the patient. Checking for existing diseases includes evaluating if the patient has myocardial infarction, target organ damage (cardiac failure, renal disease, previous stroke) and diabetes mellitus. There are major as well as minor risk factors that should be assessed. Major risk factors include smoking, hyperlipidaemia (significantly high blood cholesterol level), whilst minor factors include family history of hypertension or cardiovascular disease, obesity, high alcohol intake and sedentary lifestyle (physical inactivity) (Izzo *et al.*, 2001).

It is clear from the results that few nurses conduct the evaluation of cardiovascular risk factors and related diseases despite the fact that it has been suggested that this should be done by a medical practitioner. This may be attributed to the non-availability of medical doctors at the primary health care centres. In addition to that, they also assess for other specific contributing factors for elevated blood pressure of which are very important when taking into consideration the fact that the blood pressure level of a patient might be affected by many different factors. In Limpopo Province, the nurses also conducted the evaluation of cardiovascular risk factors and diseases (Sekokotla *et al.*, 2003). They do check for factors like persistence of severe headache, dizziness, diet of patient, oedema and problems with vision that may be related to elevated blood pressure. (Sekokotla *et al.*, 2003).

Execution of a detailed physical examination is another procedure stated in the guideline that has to be conducted. This includes assessing the signs and symptoms of enlarged heart, heart failure and previous stroke as well as oedema. From the data, the nurses usually do the following physical examinations: look for signs of oedema, measures the patient's height and body weight, determines the Body Mass Index (BMI), examines the cardiovascular system and optic fundi, the lungs, the abdomen with few examining the nervous system for evidence of hypertensive retinopathy and this raises a concern. This may be attributed to the non-availability of some diagnostic equipment in the primary health care centres. Also, time may be another factor so as to attend to all the clients' especially on their general clinic days. Sekokotla *et al.* (2003), also reported that most nurses usually look for oedema when conducting physical examination with few looking for signs and symptoms of heart failure and enlarged heart. They reported that signs and symptoms of previous strokes are not being checked.

The data reflect that the nurses conduct routine investigations (urinalysis) for hypertensive patients more frequently aside the recommendation in the guideline. Urinalysis is being done on a monthly basis by the nurses in primary health care centres. On the whole, routine investigations especially urine dipstick analysis for

protein and glucose were done by many, while urine dipstick analysis for blood was done by a few respondents.

The NHA guidelines of 2004 state that routine investigations (urinalysis) should be done at first visit, if normal, repeated every 12 months, if abnormal, repeated at the next visit. Then if protein is >2 + and/or haematuria >1 +, refer or investigate. If glycosuria and/or diabetic symptoms start dietary control. If diabetic symptoms persist for two months, refer or investigate. However, urinalysis investigation is not conducted as recommended. Therefore, there are needs for additional training and a standard guideline to direct them in what they do, and to set a standard of practice for the nurses at the primary level.

CONCLUSION

Conclusively, findings from this study showed that nurses are involved in screening and management of high blood pressure in primary health care centres in varying degrees but differ from one centre to the other affirming that there is no set standard binding what nurses are expected to do. Furthermore, results showed that skills in blood pressure assessment were dependent on professional qualifications.

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